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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/070,847 | 03/11/2002 | Johann Leist | 37904-0037 | 2541 |

28481 7590 10/10/2006

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| EXAMINER |
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LOPEZ, CARLOS N

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| ART UNIT | PAPER NUMBER |
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1731

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/070,847 | LEIST ET AL. | |
| | Examiner | Art Unit | |
| | Carlos Lopez | 1731 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19,20,22-31,37-40,42 and 45-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19,20,22-31,37-40,42 and 45-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-20, 22-31, 37-40,42, and 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christman et al (US 6,143,043). Christman discloses a method for the production of quartz crucibles (Abstract). Christman's method comprises using an arc discharge formed by an electrode arrangement 1 and 3, as a heating source for melting supplied silicon dioxide powder onto a substrate 3 (Col.3, lines 24ff). Sato's "arch discharge" which is formed by electrodes 1 and 3 is deemed as the claimed electric arc (Col. 3, lines 24ff). Furthermore, in order to provide an electric discharge as disclosed by Christman, electrodes 1 and 3 would be expected to act as anode and cathode. It also noted that the electric arc of Sato would be expected to heat a portion of the glass crucible being formed. In regards to the claimed limitation of having duplicate electric arc to fuse the supplied glass powder, Christman in Col. 3,lines 55ff teaches that additional electrodes can be added with any desired manner of arranging the electrodes. Additionally, in Col. 3,lines 35ff, Christman teaches that any size mold can be used to make a desired size of the crucible.

At the time the invention was made it would thus have been obvious to a person of ordinary skill in the art to have used multiple electrodes as taught by Christman in

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further view that Christman himself teaches that any size of crucible can be manufactured. Hence, in manufacturing a large crucible, it would be obvious to employ additional electrodes to provide sufficient heating to the larger crucible being formed as envisaged by Christman. Hence, the use of multiple electrodes and its arrangement, the claimed reduction in temperature differential is envisaged by Christman and/or would be an observation naturally derived from teachings of Christman when providing 2,4,5,6,7 or 9 electrodes as taught.

Alternatively, it would be expected to require additional heat source in order to assure that the larger glass crucibles being made are provided with homogeneous heating of the glass powder and to additionally increase the rate at which the glass crucible is made since more heat would be available to fuse the supplied glass powder into a glass crucible.

In regards to applicant's limitation regarding the spaced relation of the electrode arrangements, it is obvious to a person of ordinary skill in the art to have the electrodes spaced apart from each other in order to avoid a short circuit. If the electrode arrangements are placed adjacent to each other a short circuit may occur that would prevent the creation of a plasma discharge, the source that provides heat to the wall, from the electrodes. Hence, the electrodes being spaced apart would have the claimed spacial relation relative to the periphery of the quartz glass.

In regards to the limitation relating the duration of the heat applied and the rotation of the crucible, it is deemed as obvious to a person of ordinary skill in the art. The slower the crucible rotates, the longer it will take, hence heating durations is

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extended, to sufficiently heat the walls of the crucible. The faster the crucible rotates the less heating time will be required from the electrodes to sufficiently heat the crucible. Thus the claimed relationship is deemed to be obvious to a person of ordinary skill in the art in order to provide sufficient heating to the crucible.

As for claim 20, 22 and 39, the duplicate electrodes would be placed in regions not heated by the other electrode in order to assure that all the supplied glass powders are sufficiently heated.

As for claims 23-24, the duplicated electrode of Sato being independently separate, would be expected to independently be displaceable from the other electrode.

As for claims 25-28 and 40-41, both electrodes would be arranged at equal distances from the periphery of the formed glass crucible cause in not doing so would result in an uneven heating of the formed glass crucible. An electrode very close to the periphery of the preform would heat the glass crucible to a higher temperature than the electrode at a farther distance from the periphery of the glass crucible resulting in deformation of the glass crucible.

As for claim 29-31 and 42, as noted above the duplicate electrode may be used to assure proper heating of all the glass powder being supplied.

As for claim 37, the electrodes 1 and 3 are inclined toward a section of the glass crucible as shown in figure 1 of Sato.

Response to Arguments

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection. The instant new rejections is to

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clearly note that the prior art has envisaged the use of multiple electrodes and its arrangement wherein in providing a multiple electrodes, the claimed reduction in temperature differential of the walls sections of the crucible would be an observation naturally derived by the teaching of Christman.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CL

A handwritten signature in black ink, appearing to be 'CL' followed by a stylized flourish.